DegreeWorks Application

Design Document

CSCE247: Software Engineering

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MSJN

Version 1.0

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System Overview

The purpose of this system is to provide a program that will allow students to access and view their courses and performances throughout undergraduate college, as well as provide academic advising. The target users of this system are undergrad students majoring in Computer Information Systems and Computer Science. Other possible target users are advisors and parents of these students. The environment that the system will be used in is a web-based audit program.

References

- Team MSJN Requirements Document
- UML Class Diagram
- Team Repository (Where JSON files are)

Environment Overview

This system will be a Java-based application that is designed to be able to run on the university campus network. It's executed on a web-based audit program that provides access to the Computer Science/ Computer Information Systems student as well as Legal Guardian and Advisors.

Details

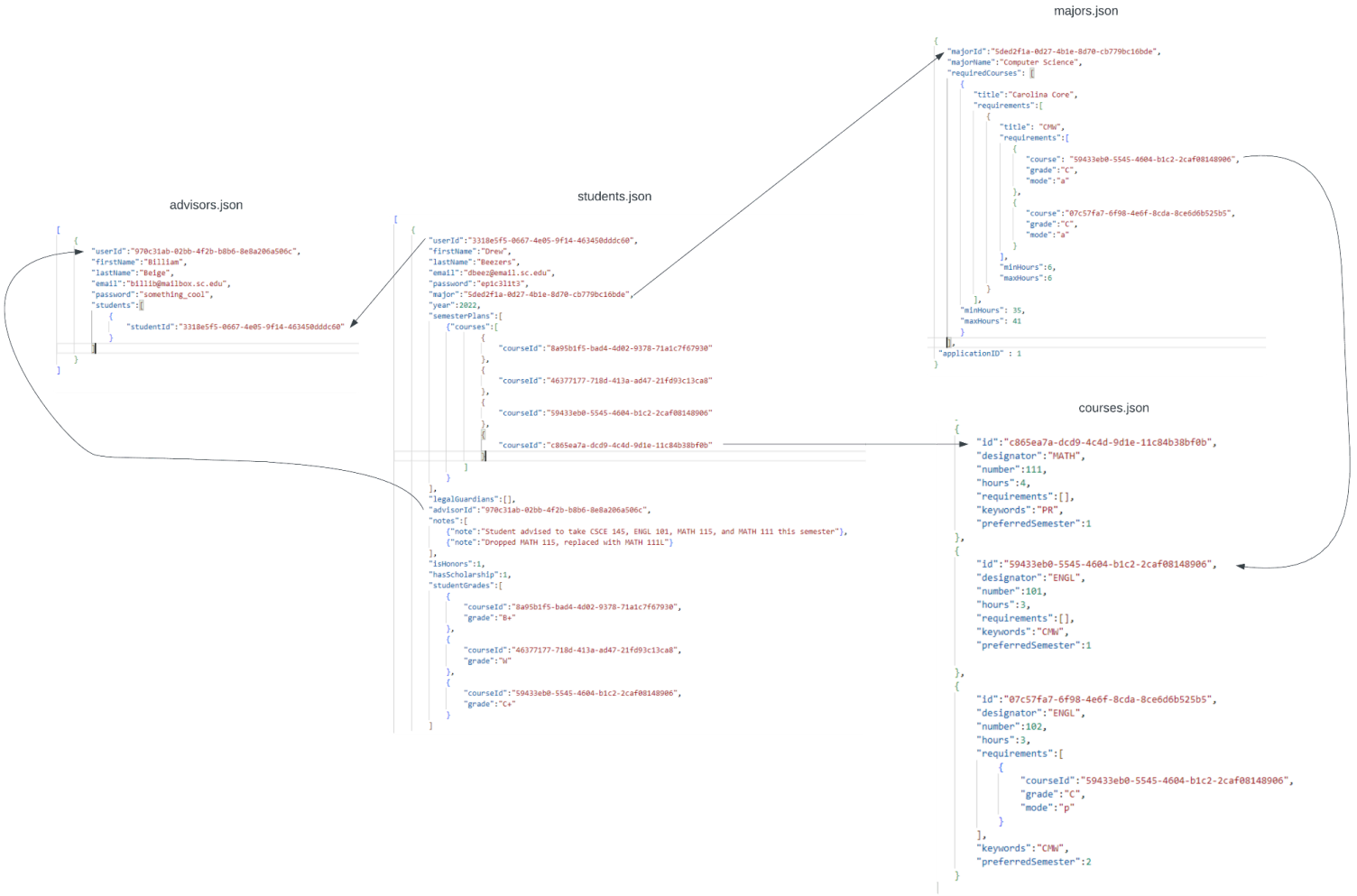
- Will be launched on the network for a secure access for users that will be able to secure their information and confidentiality.
- The program is able to store and fetch the students data, coursework, and degree progress throughout their entire school career.
- Will be accessed through web browsers to smoothly manage advising, course management, and tracking.

Data Storage

Given the scope of this application, a local text-based storage system such as JSON files will simplify and accelerate storage implementation.

Example.

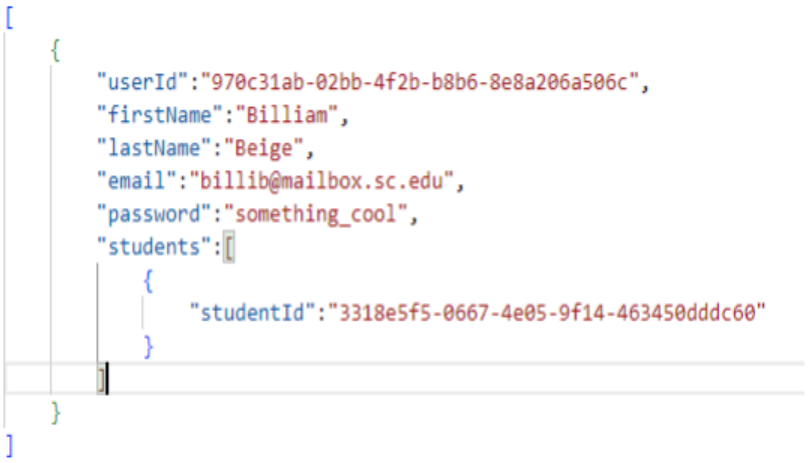
The data will be stored in four json files: students.json, advisors.json, courses.json, and majors.json. We are prepared to implement more types of non-student users such as Legal Guardians and Administrators, but as their only difference would be functionality, we will treat the advisors.json as the general example for non-student users.



students.json


```
[
    {
        "userId":"3318e5f5-0667-4e05-9f14-463450dddc60",
        "firstName":"Drew",
        "lastName":"Beezers",
        "email":"dbeez@email.sc.edu",
        "password":"ep1c3l1t3",
        "major":"5ded2f1a-0d27-4b1e-8d70-cb779bc16bde",
        "year":2022,
        "semesterPlans":[
            {"courses":[
                    {
                        "courseId":"8a95b1f5-bad4-4d02-9378-71a1c7f67930"
                    },
                    {
                        "courseId":"46377177-718d-413a-ad47-21fd93c13ca8"
                    },
                    {
                        "courseId":"59433eb0-5545-4604-b1c2-2caf08148906"
                    },
                    {
                        "courseId":"c865ea7a-dcd9-4c4d-9d1e-11c84b38bf0b"
                    }
                ]
            }
        ],
        "legalGuardians":[],
        "advisorId":"970c31ab-02bb-4f2b-b8b6-8e8a206a506c",
        "notes":[
            {"note":"Student advised to take CSCE 145, ENGL 101, MATH 115, and MATH 111 this semester"},
            {"note":"Dropped MATH 115, replaced with MATH 111L"}
        ],
        "isHonors":1,
        "hasScholarship":1,
        "studentGrades":[
            {
                "courseId":"8a95b1f5-bad4-4d02-9378-71a1c7f67930",
                "grade":"B+"
            },
            {
                "courseId":"46377177-718d-413a-ad47-21fd93c13ca8",
                "grade":"W"
            },
            {
                "courseId":"59433eb0-5545-4604-b1c2-2caf08148906",
                "grade":"C+"
            }
        ]
```

advisors.json



```
[
    {
        "userId":"970c31ab-02bb-4f2b-b8b6-8e8a206a506c",
        "firstName":"Billiam",
        "lastName":"Beige",
        "email":"billib@mailbox.sc.edu",
        "password":"something_cool",
        "students":[
            {
                "studentId":"3318e5f5-0667-4e05-9f14-463450dddc60"
            }
        ]
    }
]
```


Billiam has the id for the student Drew

majors.json


```
{
   "majorId":"5ded2f1a-0d27-4b1e-8d70-cb779bc16bde",
   "majorName":"Computer Science",
   "requiredCourses": [
      {
         "title":"Carolina Core",
         "requirements":[
            {
               "title": "CMW",
               "requirements":[
                  {
                     "course": "59433eb0-5545-4604-b1c2-2caf08148906",
                     "grade":"C",
                     "mode":"a"
                  },
                  {
                     "course":"07c57fa7-6f98-4e6f-8cda-8ce6d6b525b5",
                     "grade":"C",
                     "mode":"a"
                  }
               ],
               "minHours":6,
               "maxHours":6
            }
         ],
        "minHours": 35,
        "maxHours": 41
      }
   ],
 "applicationID" : 1
}
```

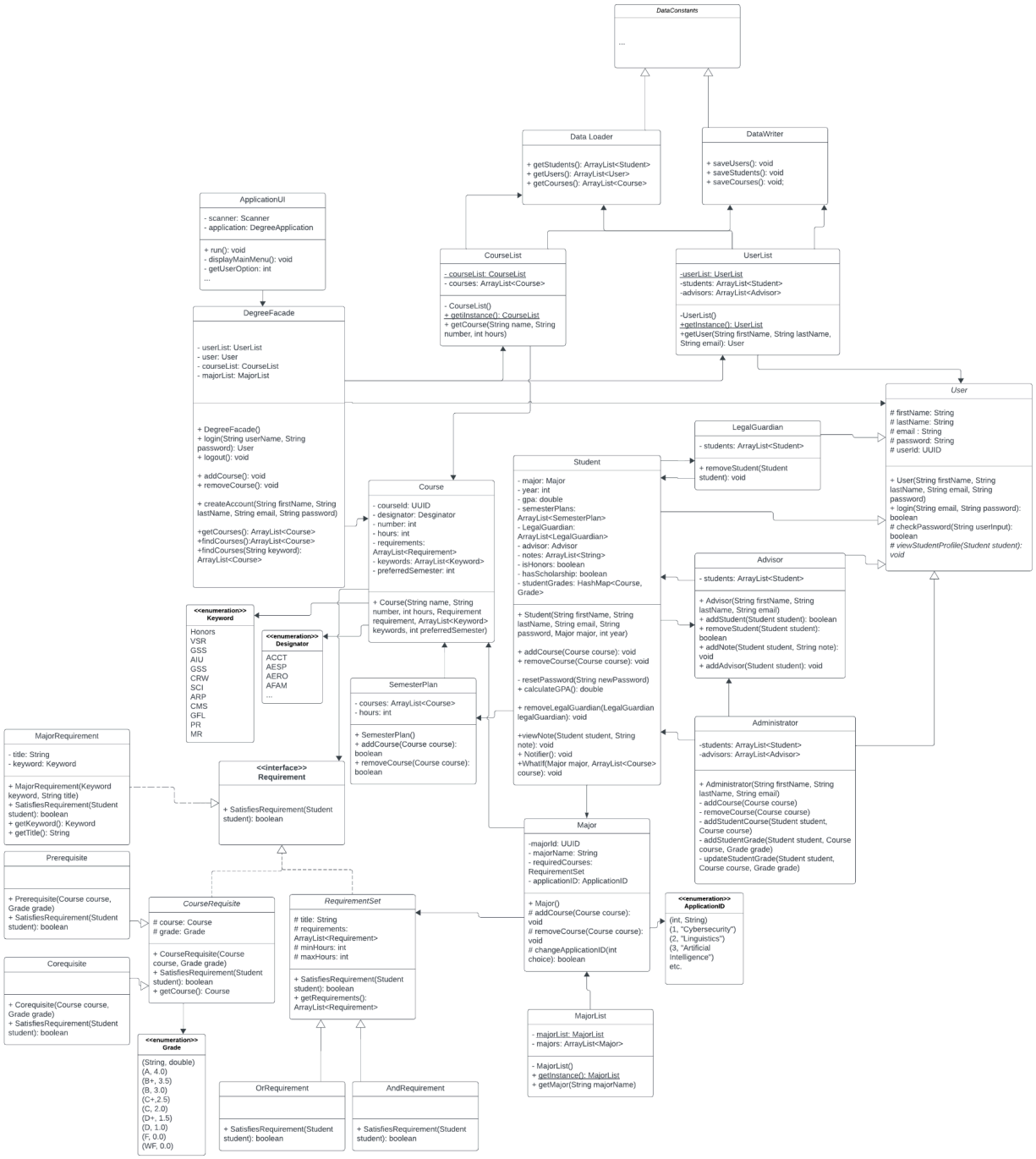
courses.json


```
{
    "id":"c865ea7a-dcd9-4c4d-9d1e-11c84b38bf0b",
    "designator":"MATH",
    "number":111,
    "hours":4,
    "requirements":[],
    "keywords":"PR",
    "preferredSemester":1
},
{
    "id":"59433eb0-5545-4604-b1c2-2caf08148906",
    "designator":"ENGL",
    "number":101,
    "hours":3,
    "requirements":[],
    "keywords":"CMW",
    "preferredSemester":1

},
{
    "id":"07c57fa7-6f98-4e6f-8cda-8ce6d6b525b5",
    "designator":"ENGL",
    "number":102,
    "hours":3,
    "requirements":[
        {
            "courseId":"59433eb0-5545-4604-b1c2-2caf08148906",
            "grade":"C",
            "mode":"p"
        }
    ],
    "keywords":"CMW",
    "preferredSemester":2
}
```

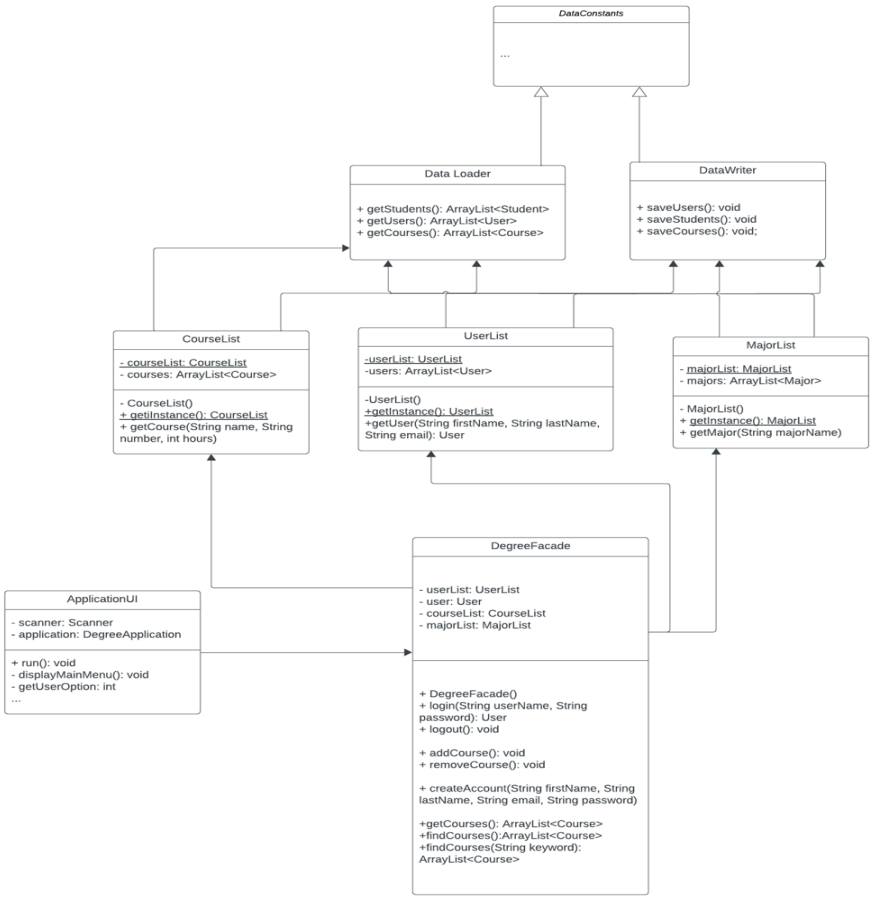
Class Diagram

Overall UML



UML Breakdown

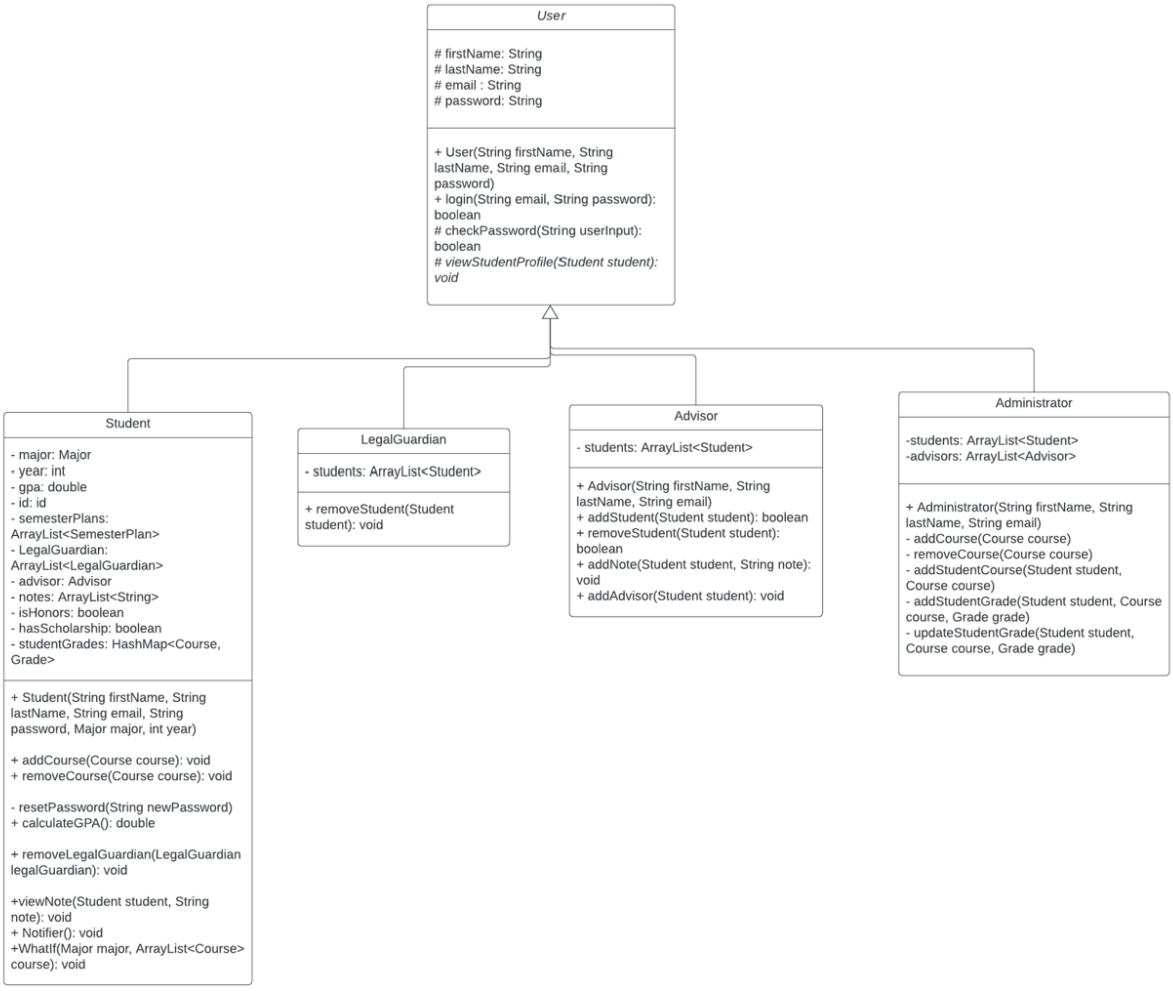
Degree Facade



Description:

This part of the program is mainly the functionality part. The Degree Facade is what allows the student to access their courses and academic advising for their undergraduate years. The Data Loader and Data Writer classes are what loads/writes the data, in this case, the student information. The Course, User, and Major Lists classes access their specified elements array lists. The ApplicationUI is how the user will be able to run this program.

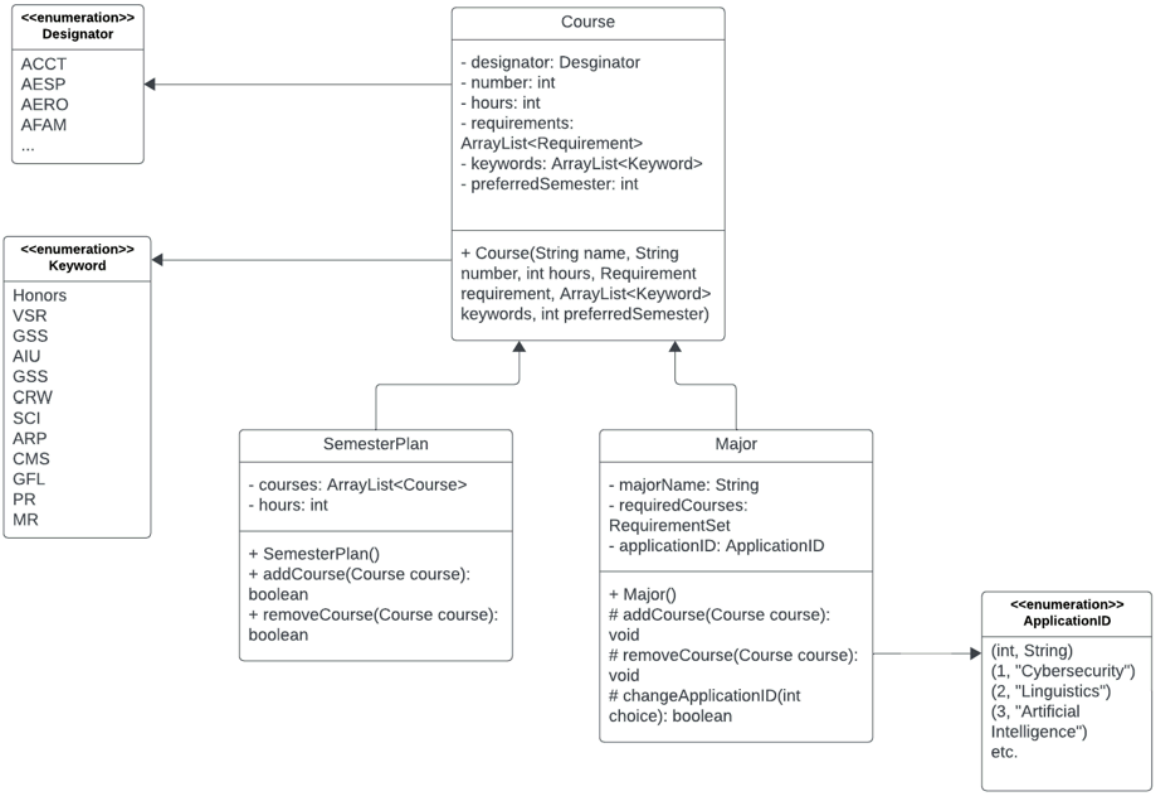
User



Description:

This part of the program is the different types of users that have access to either view or edit. The abstract User class is the main class that allows the user to login and view the student profile. The Student class is what allows the student to view their information and make changes to their profile. The Legal Guardian class allows the user to view the student information. The Advisor class allows the advisor to access their specified student and view their information, as well as, add notes that the student can view. The Administrator class is what assigns the students and advisors and what updates the student profile.

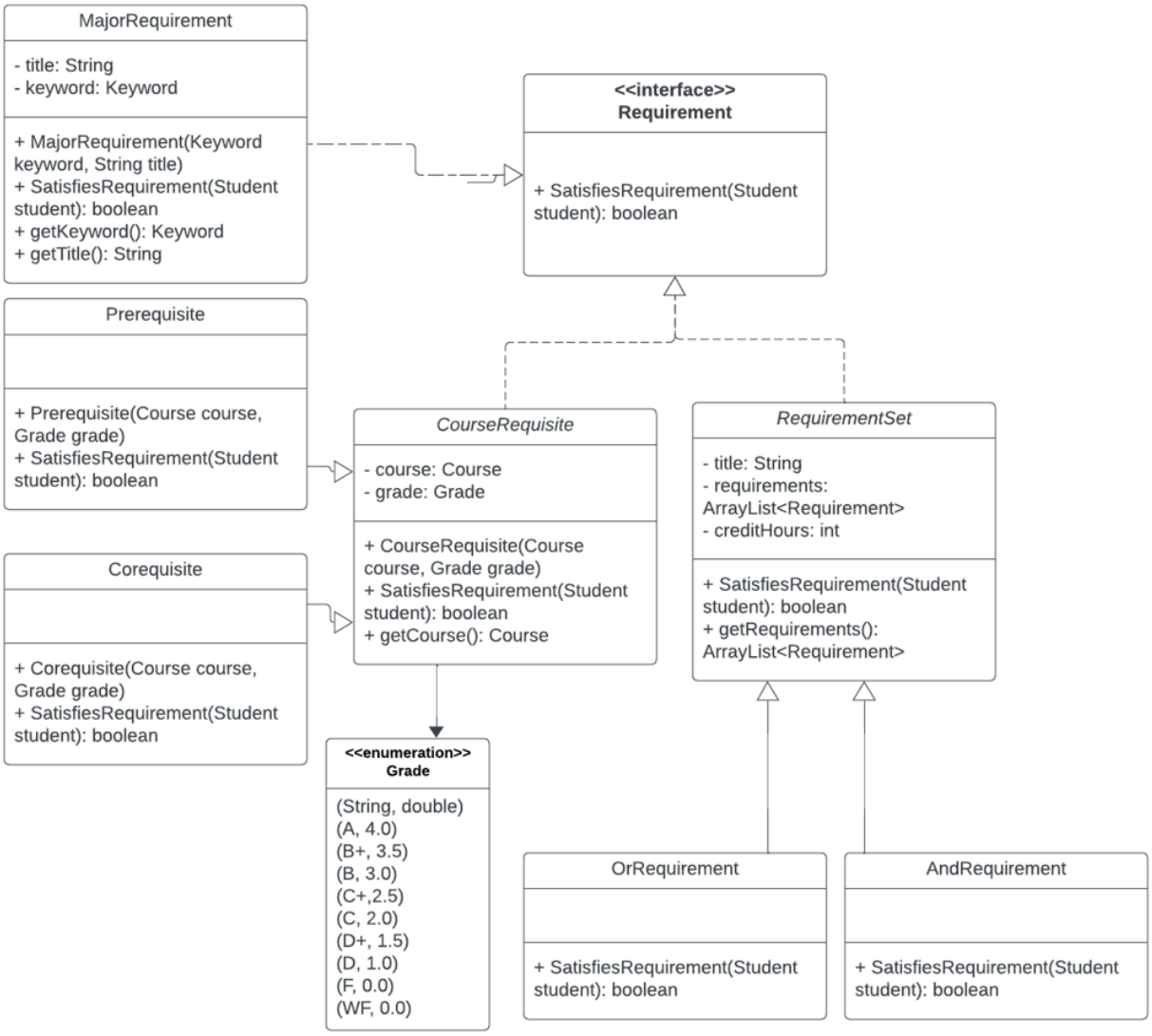
Course



Description:

This part of the program is course breakdown. The Course class holds the course information such as the requirements, name, number, type of course, and semester. The Designator enumeration is what the course abbreviation/name is. The Keyword enumeration is the type of course. The Semester Plan class determines the semester in which the student will take the course. The Major class is the major that the student is in. The ApplicationID enumeration is the required minors that a student may have to take.

Requirement



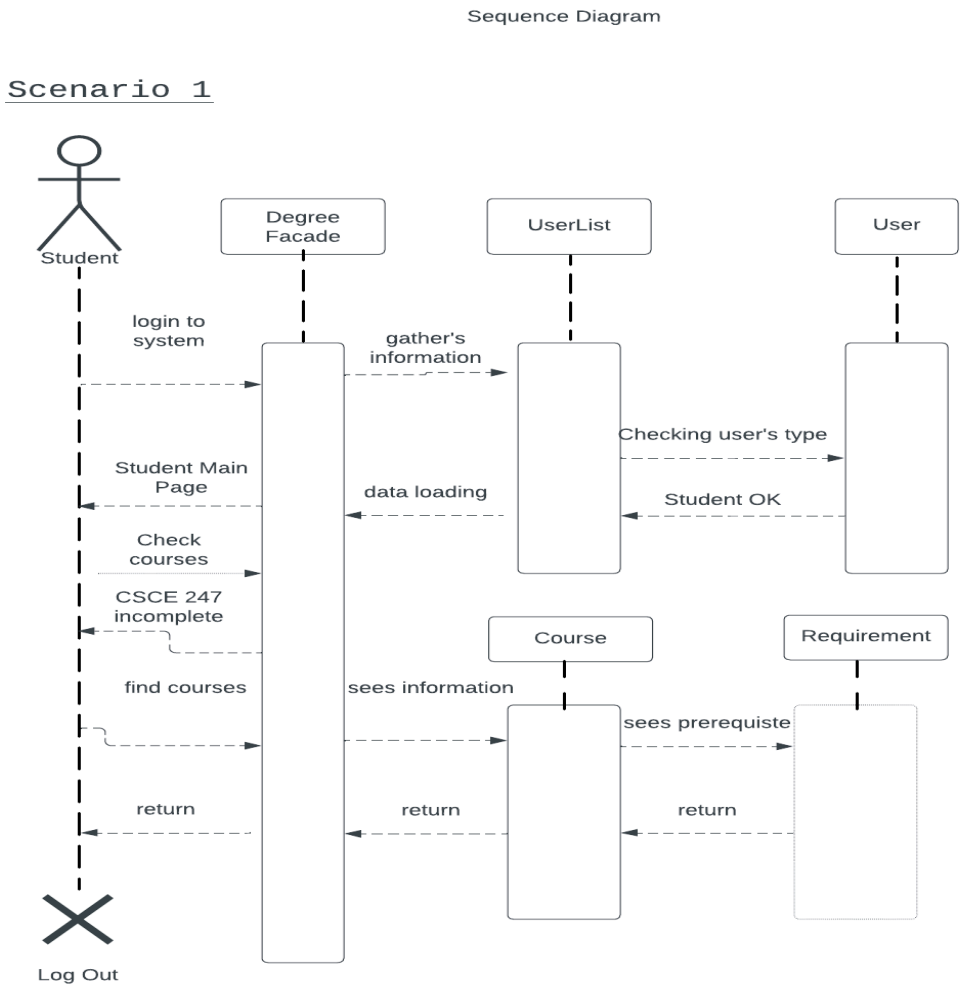
Description:

This part of the program shows what is required for a student to graduate and the course requirements needed. The Requirement interface shows when a requirement is fulfilled. The Major Requirement class shows when the requirements in a major are being met. The abstract Course Requisite class displays when the corequisite or prerequisite of a course is completed. Hence, the Corequisite and Prerequisite classes, which show when those courses are satisfied. The enumeration Grade is the grade in the course. The abstract Requirement Set class displays the requirements needed. The Or Requirement and And Requirement classes show when those requirements are satisfied.

Sequence Diagrams

Scenario 1

- Scenario Name: Student Progress
- Scenario Description: User is a student. Students log into the system, look at their major map, the system will display all the courses they have completed. They notice that they have not completed CSCE 247. They are able to look up its details and see any needed prerequisites.
- Sequence Diagram:



Scenario 2

- Scenario Name: Advisors Duty
- Scenario Description: User is the advisor. Advisor picks a certain advisee from a list of advisees. They generate their respective 8 semester plans and notice that they are at risk of losing a scholarship. Thus makes a note under his account.
- Sequence Diagram: